

U013803-1

**What is claimed is:**

- Sub  
A3
1. A semiconductor package for enhancing heat dissipation, comprising:
    - a die having an active surface;
    - a leadframe, including:
    - a die pad having a first surface and a second surface, said die being attached to said first surface of the die pad; and
    - a plurality of leads electrically connected to the active surface of said die, said leads having a surface;
    - an encapsulant sealing said die and at least a portion of the surface of the leads in said leadframe; and
    - a heat sink attached to the second surface of said die pad and at least a portion of the surface of leads in said plurality of leads with a thermally conductive and electrically insulating adhesive glue.
  2. The semiconductor package of Claim 1, wherein said heat sink is made of material selected from the group consisting of copper, copper-alloy, aluminum or aluminum alloy.
  3. The semiconductor package of Claim 1, wherein said adhesive glue is selected from the group consisting of epoxy, B-stage epoxy or silicone.
  4. The semiconductor package of Claim 1, wherein said leadframe is of a cavity-up or cavity-down type of leadframe.
  5. The semiconductor package of Claim 4, wherein said heat sink further comprises a heat radiator on its top and said leadframe is a cavity-down type of leadframe.
  6. The semiconductor package of Claim 1, manufactured by steps of:
    - (a) attaching said die to the first surface of said die pad and electrically connecting
- sub  
5a

U013803-1

the active surface of said die to the plurality of leads;

(b) adding encapsulant to an upper mold for sealing said die and one portion of the surface of said plurality of leads;

(c) attaching said heat sink to the second surface of said die pad and at least another portion of the surface of leads in said plurality of leads with the thermally conductive and electrically insulating adhesive glue; and

(d) forming and singulating said leadframe.

7. The semiconductor package of Claim 6, wherein in step (d), said leadframe is a cavity-up or cavity-down type of leadframe.

8. A semiconductor package for enhancing heat dissipation, comprising:

a die having an active surface and a second surface;

a leadframe, including:

a central-hole die pad having a first surface and a second surface, said first surface being attached to said die; and

a plurality of leads electrically connected to the active surface of said die, said leads having a surface;

an encapsulant sealing one portion of the surface of said plurality of leads in said die and leadframe; and

a heat sink having a T-type structure, said heat sink being attached to the second surface of said die, the second surface of said die pad and at least another portion of the surface of leads in said plurality of leads with a thermally conductive and electrically insulating adhesive glue.

9. The semiconductor package of Claim 8, wherein said heat sink is made of a

U013803-1

material selected from the group consisting of copper, copper alloy, aluminum or aluminum alloy.

10. The semiconductor package of Claim 8, wherein said adhesive glue is made of selected from the group consisting of epoxy, B-stage epoxy or silicone.

11. The semiconductor package of Claim 8, wherein said leadframe is of a cavity-up or cavity-down type of leadframe.

12. The semiconductor package of Claim 11, wherein the top of said heat sink further comprises a heat radiator and said leadframe is a cavity-down type of leadframe.

13. The semiconductor package of Claim 8, manufactured by steps of:

(a) attaching said die to the first surface of said die pad, and electrically connecting the active surface of said die to the plurality of leads;

(b) adding an encapsulant to an upper mold for sealing said die and one portion of the surface of said plurality of leads;

(c) attaching said heat sink to the second surface of said die, the second surface of said die pad and at least another portion of the surface of leads in said plurality of leads with a thermally conductive and electrically insulating adhesive glue; and

(d) forming and singulating said leadframe.

14. The semiconductor package of Claim 13, wherein in step (d), said leadframe is of a cavity-up or cavity-down type leadframe.

15. A semiconductor package for enhancing heat dissipation, comprising:

a die having an active surface;

a plurality of leads electrically connected to the active surface of said die, said leads having a surface;

U013803-1

Sub  
A6  
concluded

an encapsulant sealing said die and one portion of the surface of said leads; and  
a heat sink attached to at least another portion of the surface of leads in said plurality  
of leads with a thermally conductive and electrically insulating adhesive glue.

16. The semiconductor package of Claim 15, wherein said heat sink is made of a  
material selected from the group consisting of copper, copper alloy, aluminum or aluminum  
alloy.

17. The semiconductor package of Claim 15, wherein said adhesive glue is made of  
selected from the group consisting of epoxy, B-stage epoxy or silicone.

18. The semiconductor package of Claim 15, wherein said leads are a part of a  
leadframe of a cavity-up or cavity-down type.

19. The semiconductor package of Claim 18, wherein the top of said heat sink further  
comprises a heat radiator and said plurality of leads is a part of a cavity-down type of  
leadframe.

Sub  
A7

20. A method of manufacturing a semiconductor package comprising the steps of:

- (a) electrically connecting the active surface of a die to a plurality of leads;
- (b) adding encapsulant to an upper mold for sealing said die and one portion of the  
surface of leads in said plurality of leads; and
- (c) attaching said heat sink to another portion of the surface of at least some leads in  
said plurality of leads with thermally conductive and electrically insulating adhesive glue.